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Nucleotide and Amino Acid Sequences of Rat HICP

GACGCTTCTG ATCTCCAGAG GACCCTGGGG TGGGACAGGG GCCTTGGCAA GGCTGCAGCC	60
GCTGGGCAGT GGCTTGAAT GGAGGTCTTT ATTACTGGGA ACTGAGGAGC TAAGAGGCTC	120
CTGTCAGCTT GTCTAAAGT CTTAGCACTT GTGGTGGCTT GGGCTTCACA CACTGTCAGA	180
CACCTTCGTG GTGGCCTCCA CGGCCTCACC TTCAGGTTG AAGCTGGCTC CACAAGGGAC	240
ACGGTGAC ATG AGG GGC AGC CCA CTG ATC CAT CTT CTG GCC ACT TCC TTC Met Arg Gly Ser Pro Leu Ile His Leu Leu Ala Thr Ser Phe	290
1 5 10	
CTC TGC CTT CTC TCA ATG GTG TGT GCC CAG CTG TGC CGG ACA CCC TGT Leu Cys Leu Leu Ser Met Val Cys Ala Gln Leu Cys Arg Thr Pro Cys	338
15 20 25 30	
ACC TGT CCT TGG ACA CCA CCC CAG TGC CCA CAG GGG GTA CCC CTG GTG Thr Cys Pro Trp Thr Pro Pro Gln Cys Pro Gln Gly Val Pro Leu Val	386
35 40 45	
CTG GAT GGC TGT GGC TGC TGT AAA GTG TGT GCA CGG AGG CTG GGG GAG Leu Asp Gly Cys Gly Cys Lys Val Cys Ala Arg Arg Leu Gly Glu	434
50 55 60	
TCC TGC GAC CAC CTG CAT GTC TGC GAC CCC AGC CAG GGC CTG GTT TGT Ser Cys Asp His Leu His Val Cys Asp Pro Ser Gln Gly Leu Val Cys	482
65 70 75	
CAG CCT GGG GCA GGC CCT GGC GGC CAT GGG GCT GTG TGT CTC TTG GAT Gln Pro Gly Ala Gly Pro Gly His Gly Ala Val Cys Leu Leu Asp	530
80 85 90	
GAG GAT GAC GGT AGC TGT GAG GTG AAT GGC CGC AGG TAC CTG GAT GGA Glu Asp Asp Gly Ser Cys Glu Val Asn Gly Arg Arg Tyr Leu Asp Gly	578
95 100 105 110	
GAG ACC TTT AAA CCC AAT TGC AGG GTC CTG TGC CGC TGT GAT GAC GGT Glu Thr Phe Lys Pro Asn Cys Arg Val Leu Cys Arg Cys Asp Asp Gly	626
115 120 125	
GGC TTC ACC TGC CTG CCG CTG TGC AGT GAG GAT GTG CGG CTG CCC AGC Gly Phe Thr Cys Leu Pro Leu Cys Ser Glu Asp Val Arg Leu Pro Ser	674
130 135 140	
TGG GAC TGC CCA CGC CCC AAG AGA ATA CAG GTG CCA GGA AAG TGC TGC Trp Asp Cys Pro Arg Pro Lys Arg Ile Gln Val Pro Gly Lys Cys Cys	722
145 150 155	
CCC GAG TGT GTA TGT GAC CAG GGA GTG ACA CCG GCG ATC CAG CGC TCC Pro Glu Trp Val Cys Asp Gln Gly Val Thr Pro Ala Ile Gln Arg Ser	770
160 165 170	
ACG GCG CAA GGA CAC CAA CTT TCT GCC CTT GTC ACT CCT GCC TCT GCT Thr Ala Gln Gly His Gln Leu Ser Ala Leu Val Thr Pro Ala Ser Ala	818
175 180 185 190	
GAT GCT CCT TGT CCA AAT TGG AGC ACA GCC TGG GGC CCC TGC TCA ACC	866

FIGURE 1

Nucleotide Sequence Encoding Mature HICP and the Amino Acid Sequence of Mature HICP

CAG CTG TGC CGG ACA CCC TGT ACC TGT CCT TGG ACA CCA CCC CAG TGC Gln Leu Cys Arg Thr Pro Cys Thr Cys Pro Trp Thr Pro Pro Gln Cys 1 5 10 15	48
CCA CAG GGG GTA CCC CTG GTG CTG GAT GGC TGT GGC TGC TGT AAA GTG Pro Gln Gly Val Pro Leu Val Leu Asp Gly Cys Gly Cys Cys Lys Val 20 25 30	96
TGT GCA CGG AGG CTG GGG GAG TCC TGC GAC CAC CTG CAT GTC TGC GAC Cys Ala Arg Arg Leu Gly Glu Ser Cys Asp His Leu His Val Cys Asp 35 40 45	144
CCC AGC CAG GGC CTG GTT TGT CAG CCT GGG GCA GGC CCT GGC GGC CAT Pro Ser Gln Gly Leu Val Cys Gln Pro Gly Ala Gly Pro Gly Gly His 50 55 60	192
GGG GCT GTG TGT CTC TTG GAT GAG GAT GAC GGT AGC TGT GAG GTG AAT Gly Ala Val Cys Leu Leu Asp Asp Gly Ser Cys Glu Val Asn 65 70 75 80	240
GGC CGC AGG TAC CTG GAT GGA GAG ACC TTT AAA CCC AAT TGC AGG GTC Gly Arg Arg Tyr Leu Asp Gly Glu Thr Phe Lys Pro Asn Cys Arg Val 85 90 95	288
CTG TGC CGC TGT GAT GAC GGT GGC TTC ACC TGC CTG CCG CTG TGC AGT Leu Cys Arg Cys Asp Asp Gly Gly Phe Thr Cys Leu Pro Leu Cys Ser 100 105 110	336
GAG GAT GTG CGG CTG CCC AGC TGG GAC TGC CCA CGC CCC AAG AGA ATA Glu Asp Val Arg Leu Pro Ser Trp Asp Cys Pro Arg Pro Lys Arg Ile 115 120 125	384
CAG GTG CCA GGA AAG TGC TGC CCC GAG TGG GTA TGT GAC CAG GGA GTG Gln Val Pro Gly Lys Cys Cys Pro Glu Trp Val Cys Asp Gln Gly Val 130 135 140	432
ACA CCG GCG ATC CAG CGC TCC ACG GCG CAA GGA CAC CAA CTT TCT GCC Thr Pro Ala Ile Gln Arg Ser Thr Ala Gln Gly His Gln Leu Ser Ala 145 150 155 160	480
CTT GTC ACT CCT GCC TCT GCT GAT GCT CCT TGT CCA AAT TGG AGC ACA Leu Val Thr Pro Ala Ser Ala Asp Ala Pro Cys Pro Asn Trp Ser Thr 165 170 175	528
GCC TGG GGC CCC TGC TCA ACC ACC TGT GGG CTG GGC ATA GCC ACC CGA Ala Trp Gly Pro Cys Ser Thr Thr Cys Gly Leu Gly Ile Ala Thr Arg 180 185 190	576
GTG TCC AAC CAG AAC CGA TTC TGC CAA CTG GAG ATC CAA CGC CGC CTG Val Ser Asn Gln Asn Arg Phe Cys Gln Leu Glu Ile Gln Arg Arg Leu 195 200 205	624
TGT CTG CCC AGA CCC TGC CTG GCA GCC AGG AGC CAC AGC TCA TGG AAC Cys Leu Pro Arg Pro Cys Leu Ala Ala Arg Ser His Ser Ser Trp Asn 210 215 220	672

FIGURE 2

AGT GCT TTC
Ser Ala Phe
225

681

FIGURE 2 (Continued)

Alignment of the Modular Domains of HICP with the Modular Domains of Other
CCN Family Members

MODULE I : IGFBP Domain		MODULE II : vWFC Domain		MODULE III : TSP1 Domain	
28	45 46	60 61	75 76	90 91	100
1 HICP QLCRTPCT--CP-WTPPQC	-PGGVPLVLDGCC	KVCARRGESCDHLH	VCDPSQGLYCPGAG	PGGHGAVCIL	
2 CTGF QDCSAQCQ--CAAAEAPHC	-PAGVSLVLDGCC	RVCAKOLGEELCTERD	PCDPHKGLFCDFGSP	ANRKIGVCTA	
3 NOV LRCPSRCPPKCPSIS-PTC	AP-GVRSVLVDGCSCC	PVCARQGECSMR	PCDQSSGLYCDRSA	PNNQTGICMV	
4 CYR61 -TCPAACH--CPLAE-PRC	AP-GVGLVRUGGCC	KVCAKQNLNEDCSKTQ	PCDHTKGLECNFGAS	STALKGICRA	
*	*	*****	***	***	
101	120 121	135 136	150 151	165 166	180
1 HICP DDGSCEVNNGRRYLLDGETFKP	NCRVILCRCDDGGFTC	LPLCSEDVRLPSWDC	PRPKRIQVPGKCPPE	WYC-----D-Q	
2 CTGF DGA PCVFGGSVYRSGESFQS	SCKYQCTCLDGAVGC	VPLCSDMDVRLPSDC	PFPRRVKLPGKCKE	WYC-----DEP	
3 NOV EGDNCFVFDGVIVYRNGEKEFP	NCQYFCTCRDQIGC	LPRCQLDVLPGPDC	PAPRKAVAVPGECEK	WTCCS-----DEQ	
4 CYR61 EGRPCEYNRSIYQNGESFQP	NCRHQCTCIDGAVGC	IPLCPOELSLPNIGC	PNPRLVKVSGQCC	WVDEDSTIKDSIDQ	
*	*	***	***	***	
240	250	265	280	298	
1 HICP PCPNWSTANG	PCSTTCGIGIATRVS	NONRFCQLEIQRRLC	LPRPCLAARSHSSWNSAF-		
2 CTGF NCLVQTTIEWS	ACSKTKCGMGISTRVT	NDNTFCRLEKQSRRLC	MVRPCEADLEENIK-KGKK		
3 NOV NCIEQTTEWS	ACSKSCGMGVSTRVT	NRRNQCEMVQTRLC	IVRPCEQEPEEVTDKGKK		
4 CYR61 KCIVQTTSW	QCSKSCGTGISTRVT	NDNPETRVLVKE	TRIC EVRPCGQPVYSSLK-KGKK		
*	*	====	*	*	

FIGURE 3

Northern Blot Analysis of HICP Expression in Rat Aorta Smooth Muscle Cells

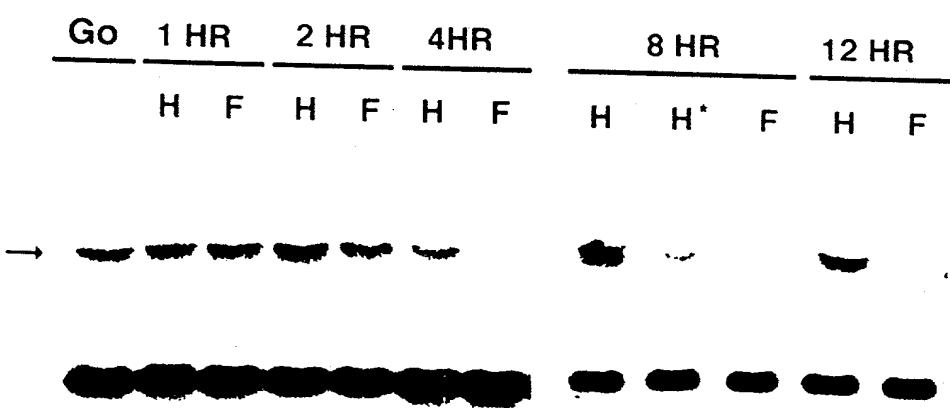


FIGURE 4

D₁α Synthesis in Rat Aorta Smooth Muscle Cells

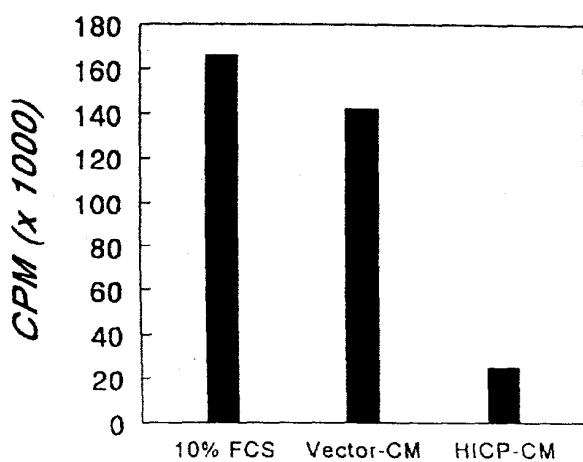


FIGURE 5